Pengo™

SEGA®

Preliminary Owner's Manual

Manual Part No. 420-0811

PENGO™

PRELIMINARY OWNER'S MANUAL

MANUFACTURED BY

SEGA®

TLX 910-335-1621

PENGO™ PRELIMINARY OWNER'S MANUAL

INTRODUCTION

PENGO™ is a microprocessor based coin-operated electronic game, that makes extensive use of digital integrated circuitry and television monitor concepts. This manual is designed for the use of the maintenence technicians who possess a general working knowlege of solid-state circuitry and video monitor theory. Any individual NOT knowlegeable in these areas SHOULD NOT attempt repair of the electronic portions of the game.

In addition to this manual and training in electronics, troubleshooting and repair will be facilitated by: access to general electronic type handtools, a multimeter, a 50 to 100 MHz oscilloscope and a logic probe would be helpful.

The information contained in this manual is preliminary and subject to change before printing of final manual.

Technical assistance is available toll-free by calling;

1-800-854-1938 or

1-800-722-8576 inside California

Parts Information assistance is available toll-free by calling;

1-800-854-1900 or

1-800-722-8575 inside California

Questions or comments concerning PENGO™ or any of our games are welcome and should be directed to:

Customer Service Manager

SEGA Enterprises

16250 Technology Drive

San Diego, California 92127-1985

IMPORTANT NOTES

The following note is included in compliance with FCC rules: WARNING: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. As temporarily permitted by regulation, it has not been tested for compliance with the limits for Class A computing devices pursuant to Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

OTHER NOTES

NEVER replace any components with anything other than exact replacement parts.

NEVER remove circuit board connections while power is on.

DO NOT replace fuses with anything other than the proper value. A blown fuse indicates an overload condition within the game. Replacing fuses with a higher value can cause severe damage to internal components if an overload occurs.

ALWAYS consult the manual before attempting repairs.

GAME CONCEPT

When the Start Button is pushed, the screen is filled with a grid of 10 X 16 ICE BLOCKS. To the accompaniment of music, some of the blocks are erased to form a maze of ICE BLOCKS (the maze configuration changes from round to round). The central character, PENGO the Penguin, appears at the center of the screen, and three SNO-BEES (more than three, in later rounds) also appear randomly within the maze. Three of the ICE BLOCKS are special DIAMOND BLOCKS, which can be aligned through skillful play for extra points. There are also some special blocks that flash on and off for a few seconds at the start, signifying that they contain SNO-BEE eggs that will hatch later on. The SNO-BEES are the antagonists of PENGO, and they pursue him around the ice field. If a SNO-BEE catches PENGO, it delivers a fatal sting.

PENGO can be maneuvered about the ice field by means of the four-way joystick, and can also rearrange the maze of ICE BLOCKS by pushing individual ICE BLOCKS around the ice field. If PENGO comes up against a "free" ICE BLOCK (that is, one that is not blocked on the side opposite PENGO), the player can, by pushing the control button, cause PENGO to push the ICE BLOCK away from him. It will move until it comes up against another ICE BLOCK, or against one of the four walls. By re-arranging the blocks in this fashion, PENGO can line up the three DIAMOND BLOCKS so that they adjoin, thereby earning a 10,000 point bonus (but only 5,000 points if the DIAMOND BLOCKS are lined up against a wall, as this is much easier).

If PENGO comes up against an ICE BLOCK that is not "free" (that is, one that is blocked on the side opposite PENGO by a wall or by another ICE BLOCK), then pushing the Control Button causes PENGO to slowly disintegrate that ICE BLOCK, and to move through that space. DIAMOND BLOCKS can be pushed aroung the ice field by PENGO just like ordinary ICE BLOCKS, but they cannot be disintegrated.

The SNO-BEES pursue PENGO as he goes about his tasks, and if they catch him, will deliver a fatal sting. PENGO can squash the SNO-BEES, by pushing ICE BLOCKS into them. If an ICE BLOCK is pushed into a SNO-BEE, it will carry him along, and destroy him by squashing him against another ICE BLOCK or wall. Additionally, SNO-BEES can be "frozen" if they are touching the wall of an ice field when PENGO pushes against that same wall. The wall will vibrate, and any SNO-BEE up against that wall

will be temporarily frozen. PENGO must now run over the frozen SNO-BEE to destroy it. This tactic works on any of the four walls, and can be used against more than one SNO-BEE at a time.

In these two ways, PENGO can clear the ice field of the SNO-BEES. PENGO earns points for each SNO-BEE squashed, and extra bonus points for squashing more than one SNO-BEE with a single push of one ICE BLOCK. PENGO can also earn extra points by dispatching the SNO-BEES quickly; the more quickly the SNO-BEES are cleared from the field, the more bonus points are earned.

New SNO-BEES are hatched in some of the ICE BLOCKS, and emerge as the play progresses. If PENGO can remember which of the ICE BLOCKS harbor SNO-BEE eggs, (they flash briefly at the start of the round) and can disintegrate them before the SNO-BEES hatch, then PENGO can shorten the game time considerably, thereby earning time bonus points. In addition, PENGO earns additional bonus points for disintegrating any ICE BLOCK containing a SNO-BEE egg.

SNO-BEES can also disintegrate ICE BLOCKS, and will do so in order to attack PENGO. When only one SNO-BEE is left, that last SNO-BEE becomes much more dangerous, moving about much more quickly, and disintegrating ICE BLOCKS more rapidly. If that last SNO-BEE is not destroyed before the time runs out, it will gradually grow smaller, and finally disappear altogether, signifying the end of that round.

Lining up the three DIAMOND BLOCKS, vertically or horizontally, is the best way to attain a high score, because of the substantial bonus points earned. Once two DIAMOND BLOCKS are aligned, all three DIAMOND BLOCKS will start to flash. After successfully lining up all three DIAMOND BLOCKS, the whole play screen flashes; all game movement stops, and the bonus points are counted down at the center of the screen and added at the top. As soon as this countdown is completed, PENGO is again free to move, but all the SNO-BEES are frozen for a few seconds; this is a good opportunity for PENGO to catch them and finish them off. However, if PENGO is too slow and the SNO-BEES recover, the game continues as before.

In a two-player game, players alternate after each PENGO is stung. The game ends when the players lose their last PENGO.

SCORING

- Paralyze a SNO-BEE and catch it . . . . 100 points
- Crush a SNO-BEE between ICE BLOCKS 400
- Disintegrate an ICE BLOCK containing
  a SNO-BEE egg 500
- Crush 2 SNO-BEES at the same time 1,600
- Crush 3 SNO-BEES at the same time 3,200
- Special Bonus
  Align 3 DIAMOND BLOCKS along a wall 5,000
  Align 3 DIAMOND BLOCKS not along a wall 10,000
- Time Bonus
  Destroy all SNO-BEES within the preset time to score bonus points as follows:

TIME BONUS POINTS

Seconds	Bonus Points
0 to 19	5,000
20 to 29	2,000
30 to 39	1,000
40 to 49	500
50 to 59	10
60 or over	No Bonus

SELF-TEST

- The primary function of the self-test diagnostics are to verify proper operation of the game board, monitor color adjustments, and to facilitate isolation of failures. Initialization is by the Self-Test Switch mounted on the Volume Control Block, just inside of the electronics compartment door at the front of the cabinet. Each test will run approximately 40 seconds unless interrupted by the One Player Start Button. Sequencing is as follows:

1. Video RAM Check (RAM 1)
   Work RAM Check (RAM 2)
   - Error outputs are displayed in red.
2. EPROM Check (3 EPROMS total)
   - As above, error outputs are displayed in red.
3. Player Input Check
   - Press One Player Start Button twice to proceed to the next test.

PLAYER CONTROLS

1P	2P
UP	OFF
DOWN	OFF
LEFT	OFF
RIGHT	OFF
SHOOT	OFF

4. Color Pattern Test
   - Displays four colors: red, green, blue, and white. For use in color purity adjustments.
5. DIP Switch Settings
   - Press the 1 P Start Button or wait approximately 40 seconds to proceed to the next test.

DIP SWITCHES

	1	2	3	4	5	6	7	8
SW 1	0	0	0	0	0	0	0	0
SW 2	0	0	0	0	0	0	0	0

6. Coin Switch Test
   - This test checks the timing of the coin switch. Coin mech 1 will appear as A, and coin mech 2 as B. Either letter appearing within the BAD area indicates switch mis-timing. Adjust a a faulty coin switch by bending the trip wire up or down, slightly.

OPTION SELECTION

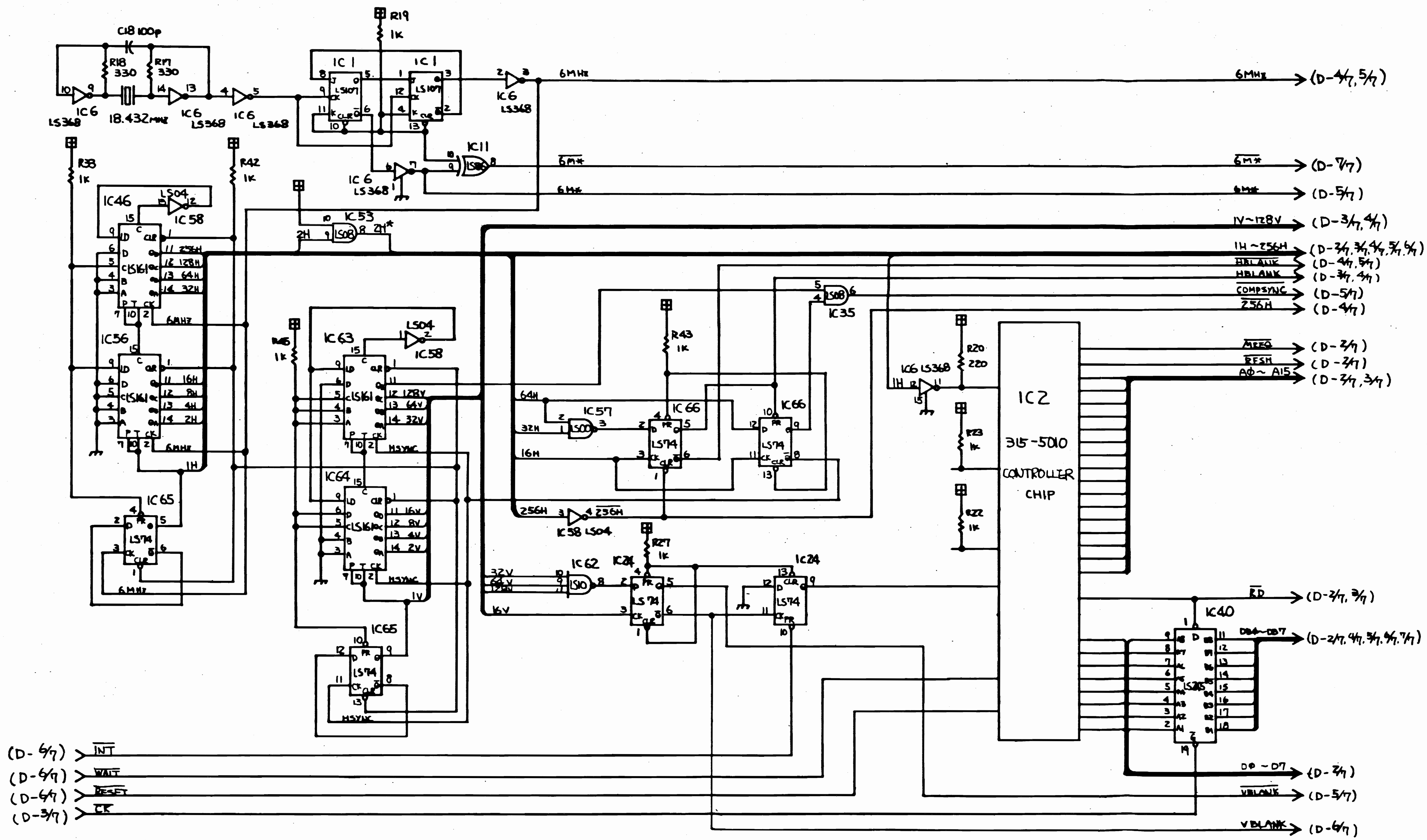
OPTION	SWITCH #1							
	1	2	3	4	5	6	7	8
Bonus PENGO @ 30,000	C	X	X	X	X	X	X	X
@ 50,000	0	X	X	X	X	X	X	X
Normal Play	X	X	X	X	X	0	X	X
Continuous Play	X	X	X	X	X	C	X	X
Difficulty: Hardest	X	X	X	X	X	X	C	C
Hard	X	X	X	X	X	X	0	C
Medium	X	X	X	X	X	X	C	0
Easy	X	X	X	X	X	X	0	0
5 PENGOs	X	X	X	C	C	X	X	X
4 "	X	X	X	0	C	X	X	X
3 "	X	X	X	C	0	X	X	X
2 "	X	X	X	0	0	X	X	X
Attract Sound On	X	C	X	X	X	X	X	X
" " Off	X	0	X	X	X	X	X	X
Upright	X	X	C	X	X	X	X	X
Cocktail Table	X	X	0	X	X	X	X	X

OPTION	SWITCH #2							
	1	2	3	4	5	6	7	8
4 Coin/1 Credit	C	C	C	C	C	C	C	C
3 Coin/1 Credit	C	C	C	0	C	C	C	0
2 Coin/1 Credit	C	C	0	C	C	C	0	C
1 Coin/1 Credit	C	C	0	0	C	C	0	0
1 Coin/2 Credit	C	0	C	C	C	0	C	C
1 Coin/3 Credit	C	0	C	0	C	0	C	0
1 Coin/4 Credit	C	0	0	C	C	0	0	C
1 Coin/5 Credit	C	0	0	0	C	0	0	0
1 Coin/6 Credit	0	C	C	C	0	C	C	C
2 Coin/1 Credit	0	C	C	0	0	C	C	0
4 Coin/2 Credit								
5 Coin/3 Credit								
6 Coin/4 Credit								
2 Coin/1 Credit	0	C	0	C	0	C	0	C
4 Coin/3 Credit								

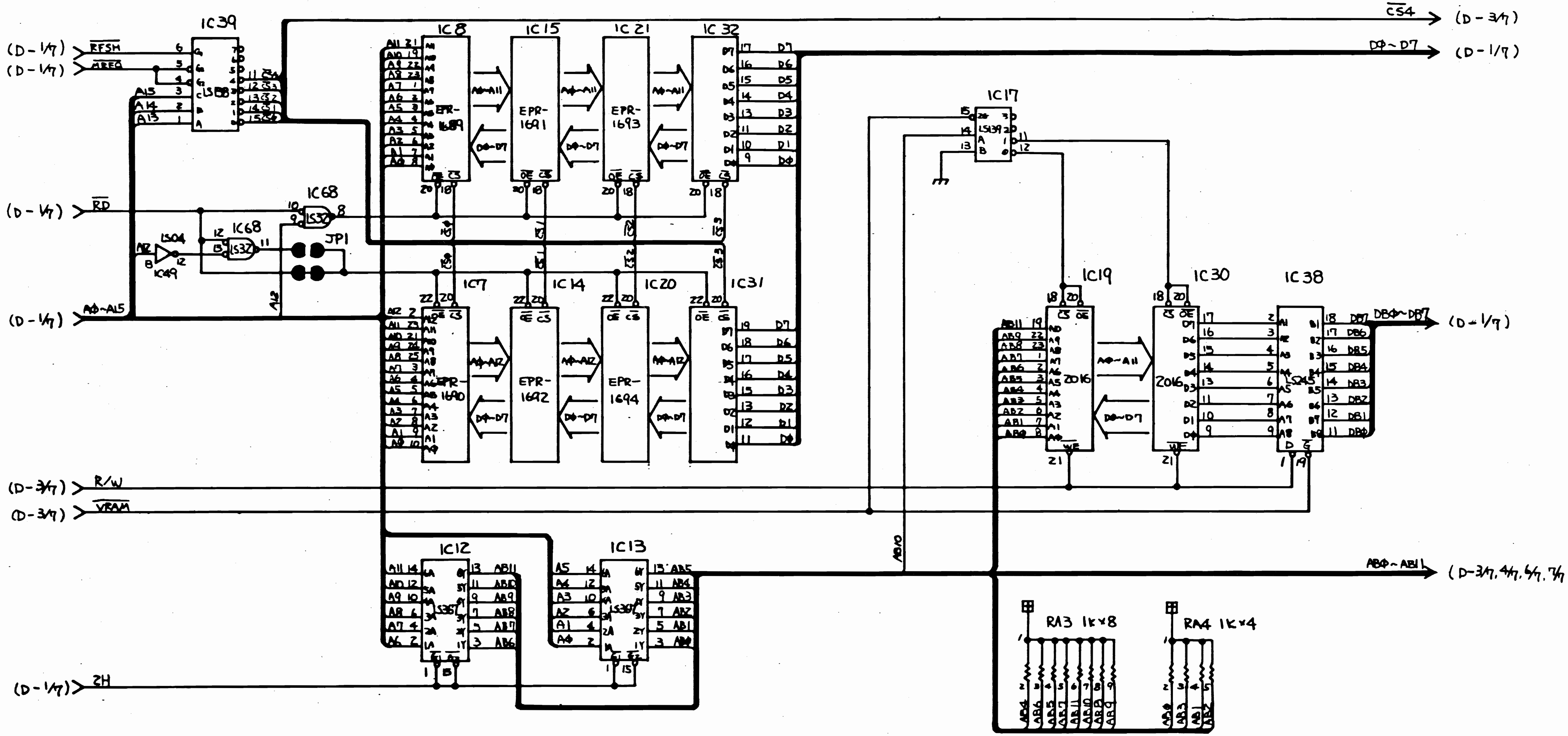
OPTION SELECTION (cont.)

OPTION	SWITCH #2 1	2	3	4	5	6	7	8
1 Coin/1 Credit	0	C	0	0	0	C	0	0
2 Coin/2 Credit								
3 Coin/3 Credit								
4 Coin/4 Credit								
5 Coin/6 Credit								
1 Coin/1 Credit	0	0	C	C	0	0	C	C
2 Coin/2 Credit								
3 Coin/3 Credit								
4 Coin/5 Credit								
1 Coin/1 Credit	0	0	C	0	0	0	C	0
2 Coin/3 Credit								
1 Coin/2 Credit	0	0	0	C	0	0	0	C
2 Coin/4 Credit								
3 Coin/6 Credit								
4 Coin/8 Credit								
5 Coin/11 Credit								
1 Coin/2 Credit	0	0	0	0	0	0	0	0
2 Coin/4 Credit								
3 Coin/6 Credit								
4 Coin/9 Credit								

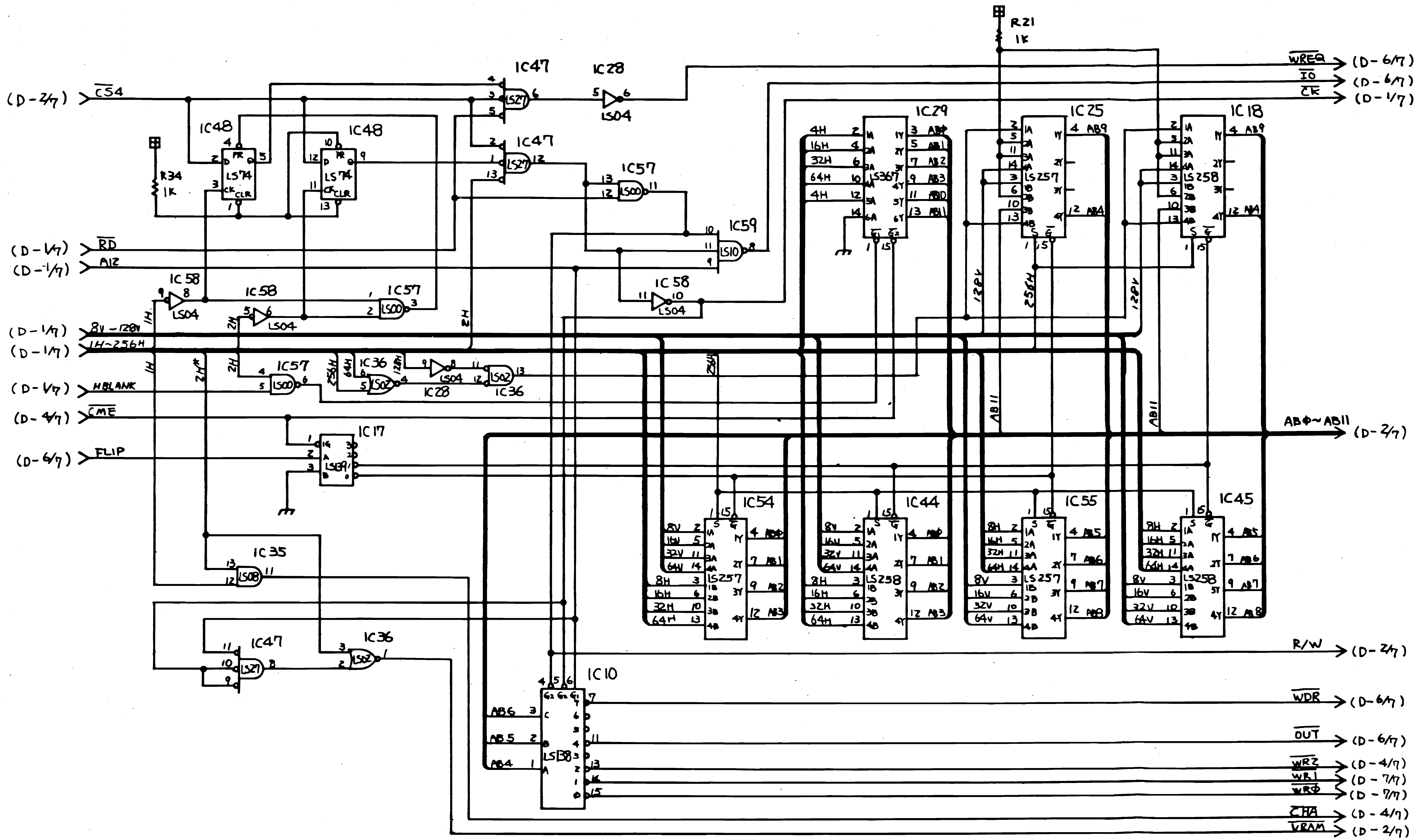
0 = Open   C = Closed   X = Not Used



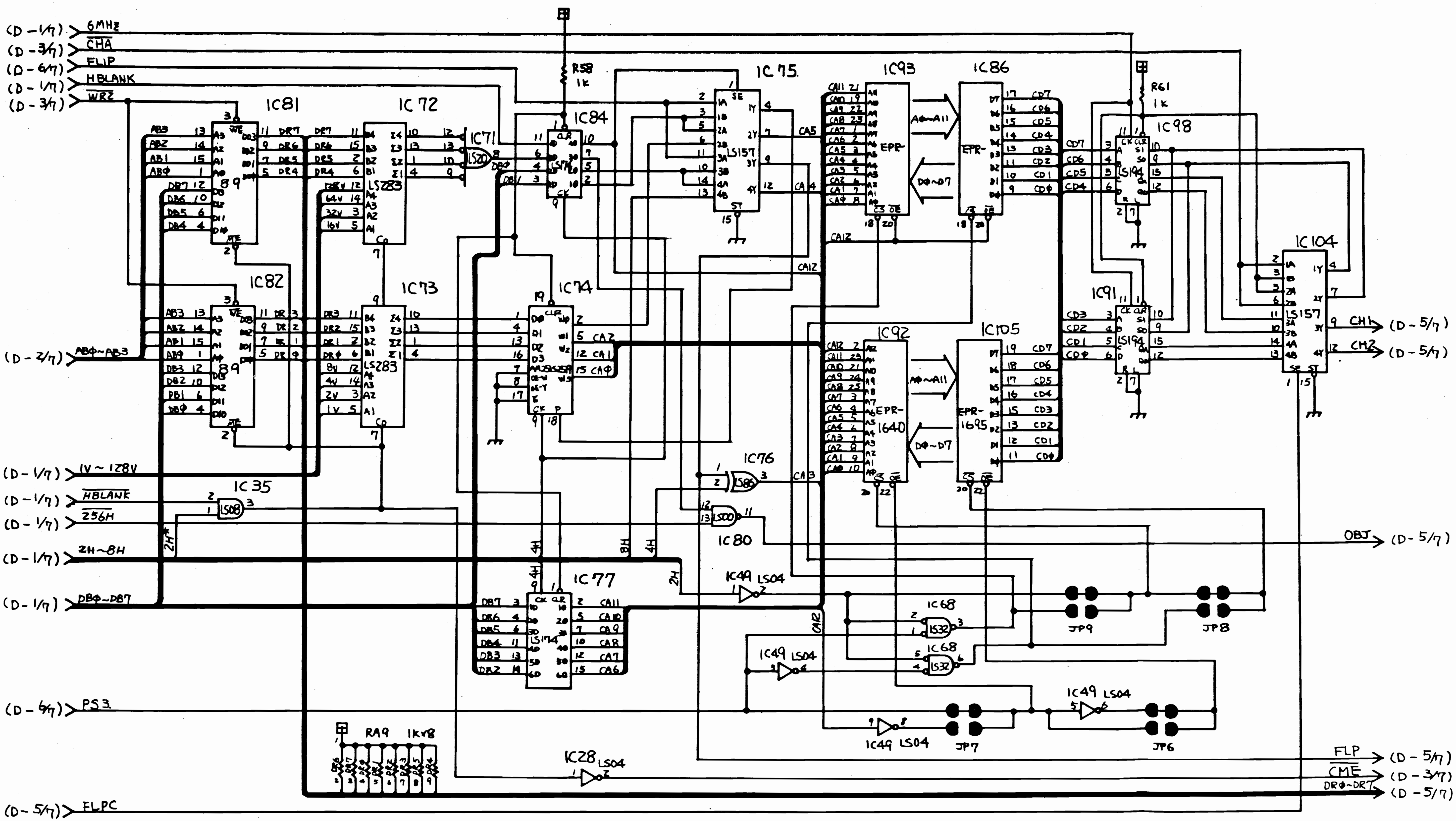
834-0386 PENGO LOGIC (D-1/7)



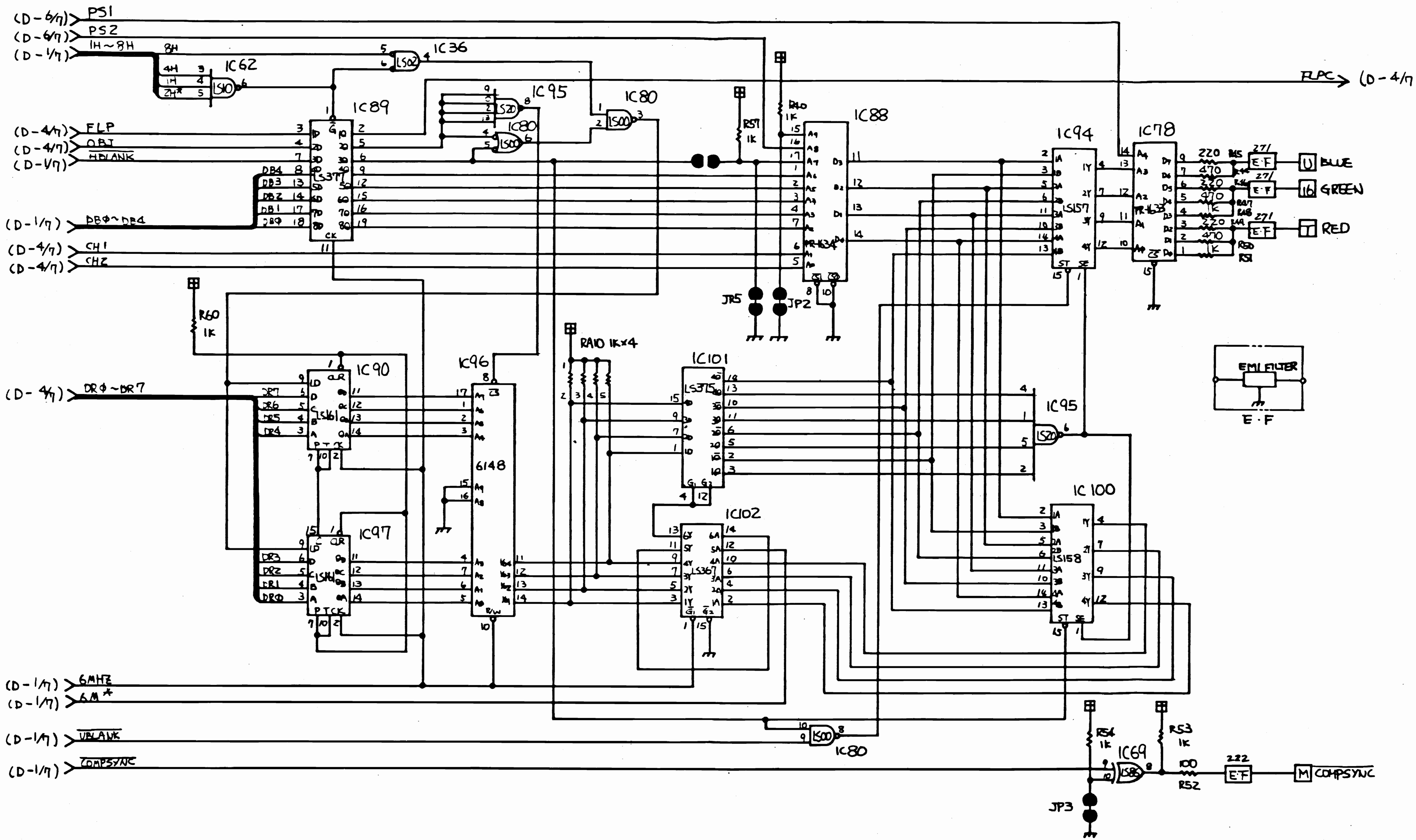
834-0386 PENGO LOGIC (D-2/7)



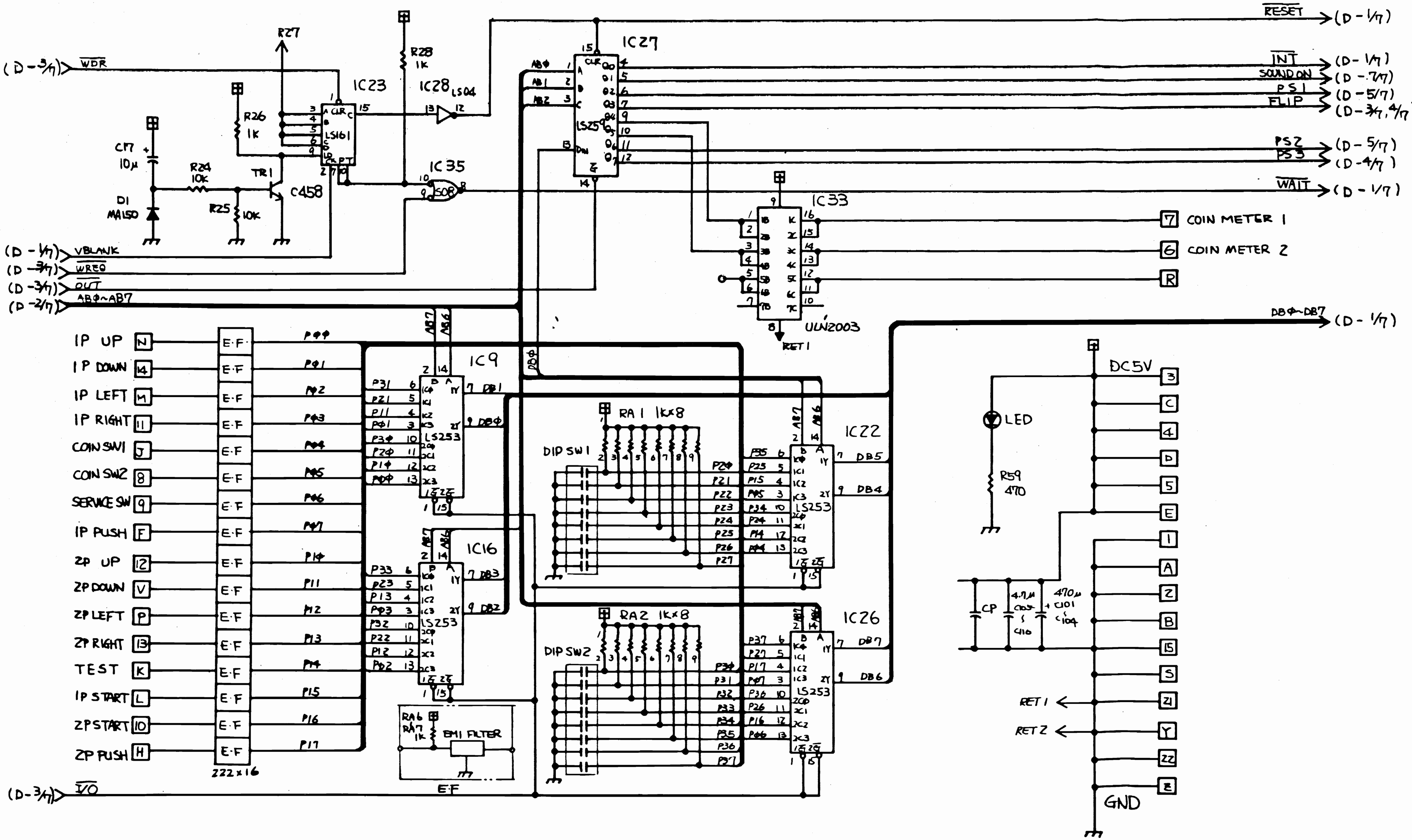
834-0386 PENGO LOGIC (D-3/7)



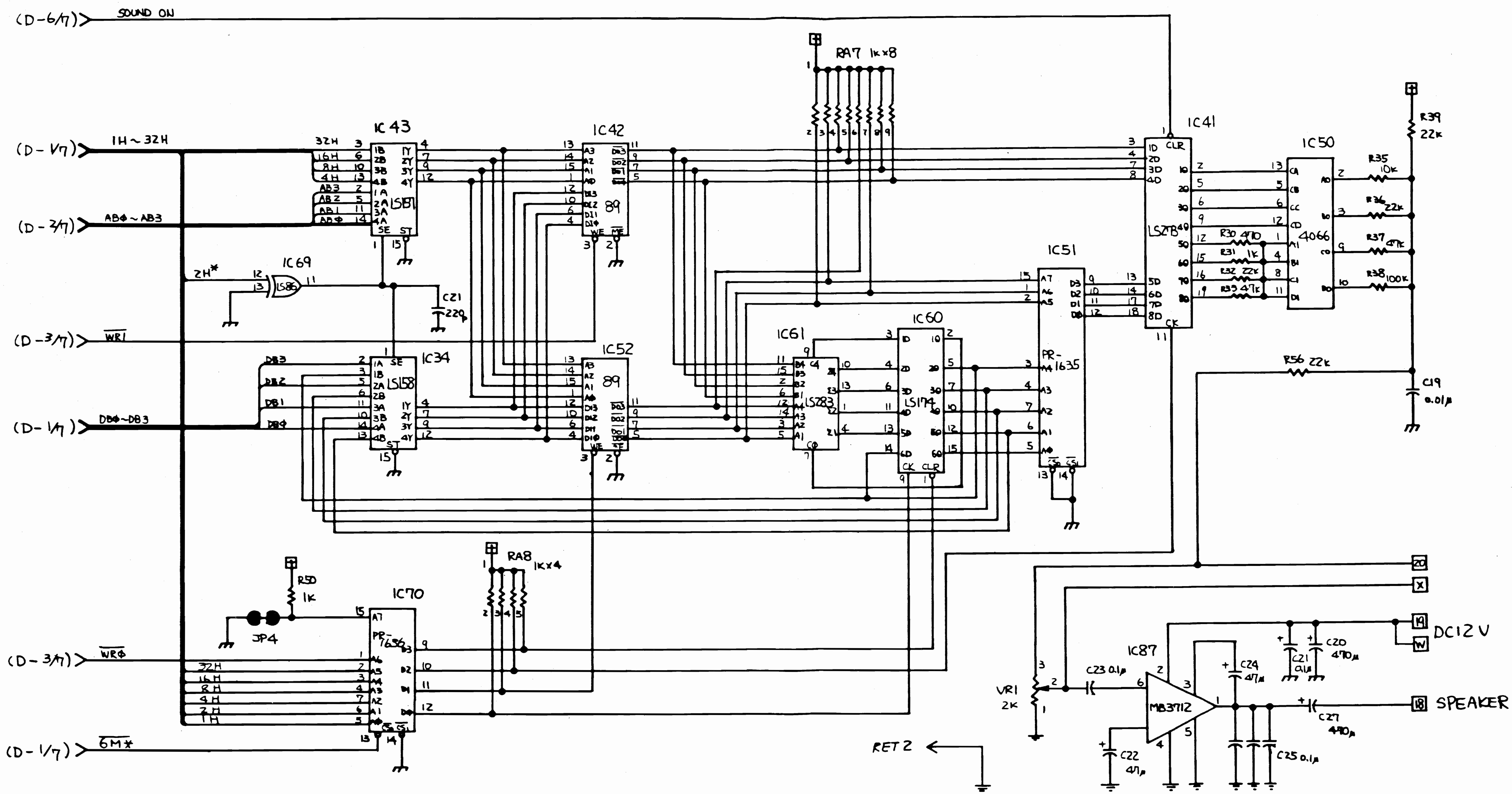
834-0386 PENGO LOGIC (D-4/7)



834-0386 PENGO LOGIC (D-5/7)



834-0386 PENGO LOGIC (D-6/7)



834-0386 PENGO LOGIC (D-7/7)

FINAL MANUAL ORDER FORM

Please fill out the information below, and return it to us. When the final Owner's Manual is available, it will be shipped directly to you, free of charge.

NAME ______________________________________

COMPANY NAME ______________________________

COMPANY ADDRESS ___________________________

____

ZIP CODE __________________________________

AREA CODE __________ TELEPHONE NUMBER ______________

First Fold

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 10129 SAN DIEGO, CALIFORNIA

POSTAGE WILL BE PAID BY ADDRESSEE

SEGA/GREMLIN
16250 Technology Drive
San Diego, California 92127

Attn: Customer Service

Second Fold

Tape This Edge

OPTION		1	2	3	4	5	6	7	8
BONUS PENGO	AT 30,000	ON							
	AT 50,000	OFF							
	PLAY MODE						OFF		
	RACK TEST						ON		
GAME DIFFICULTY	HARDEST							ON	ON
	HARD							OFF	ON
	MEDIUM							ON	OFF
	EASY							OFF	OFF
NUMBER OF PENGO	5 PENGOES				ON	ON			
	4 PENGOES				OFF	ON			
	3 PENGOES				ON	OFF			
	2 PENGOES				OFF	OFF			
DEMONSTRATION SOUND	ON		ON						
	OFF		OFF						
	UPRIGHT			ON					
	TABLE			OFF					

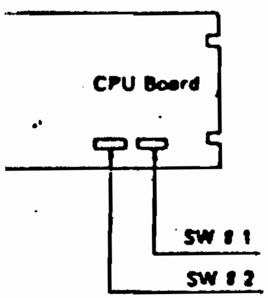
■ **RACK TEST**

ゲームをスタートしてからDIP SW #6を"ON"にすると自動的にラウンドが進みます。
"OFF"にすると、そのラウンドからゲームができます。

Start a game and set DIP SW #6 "ON" to advance the rounds of the game automatically. Set the same switch to "OFF" in the round from which you want to play the game.

COIN/CREDIT OPTIONS SWITCH

SWITCH # 2 SETTING



OPTION	1	2	3	4	5	6	7	8
4 Coins 1 Credit	on	on	on	on	on	on	on	on
3 Coins 1 Credit	on	on	on	off	on	on	on	off
2 Coins 1 Credit	on	on	off	on	on	on	off	on
1 Coin 1 Credit	on	on	off	off	on	on	off	off
1 Coin 2 Credits	on	off	on	on	on	off	on	on
1 Coin 3 Credits	on	off	on	off	on	off	on	off
1 Coin 4 Credits	on	off	off	on	on	off	off	on
1 Coin 5 Credits	on	off	off	off	on	off	off	off
1 Coin 6 Credits	off	on	on	on	off	on	on	on
2 Coins 1 Credit 4 2 5 3 6 4	off	on	on	off	off	on	on	off
2 1 4 3	off	on	off	on	off	on	off	on
1 1 2 2 3 3 4 4 5 6	off	on	off	off	off	on	off	off
1 1 2 2 3 3 4 5	off	off	on	on	off	off	on	on
1 1 2 3	off	off	on	off	off	off	on	off
1 2 2 4 3 6 4 8 5 11	off	off	off	on	off	off	off	on
1 2 2 4	off	off	off	off	off	off	off	off

PENGO

I/0 INSTRUCTION PENGO 834-0386	(D-1/1

SUB-ASSY LIST-B 1966

Solder side	Pin	Pin	Parts side
GND	22	Z	GND
GND	21	Y	GND
VOLUME	20	X	VOLUME
DC 12V	19	W	DC 12V
SPEAKER	18	V	2P DOWN
COMP SYNC	17	U	BLUE
GREEN	16	T	RED
GND	15	S	GND
1P DOWN	14	R	
2P RIGHT	13	P	2P LEFT
2P UP	12	N	1P UP
1P RIGHT	11	M	1P LEFT
2P START	10	L	1P START
SERVICE SWITCH	9	K	TEST
COIN SWITCH 2	8	J	COIN SWITCH 1
COIN METER 1	7	H	2P PUSH
COIN METER 2	6	F	1P PUSH
DC 5V	5	E	DC 5V
DC 5V	4	D	DC 5V
DC 5V	3	C	DC 5V
GND	2	B	GND
GND	1	A	GND

SUPPLY VOLTAGES & CURRENTS	
VOLTAGE	CURRENT
DC5V	2A
DC12V	0.4A